

AMENDMENTS TO THE CLAIMS

1. (currently amended) A method, carried out by an electronic computer under control of a computer program, for detecting a background intensity gradient within a microarray data set, the method comprising:

computing, by an electronic computer, convergence metrics for features within the microarray data set; and

when the convergence metrics computed for a number of features are larger than a threshold value,

determining, by an electronic computer, that the microarray data set exhibits a background intensity gradient, wherein a pattern of distribution of at least some of said features with convergence metrics larger than said threshold value indicates the location and direction of said background intensity gradient; and

outputting, by an electronic computer, a numerical indication of the determined background intensity gradient to at least one of: a user, a display, a memory, or a computer.

2. (previously presented) The method of claim 1 wherein a convergence metric is computed for each feature in the microarray data set.

3. (previously presented) The method of claim 1 wherein a convergence metric is computed for a selected number of features in the microarray data set.

4. (previously presented) The method of claim 1 wherein the convergence metric computed for each feature is a convergence metric related to a difference between mean and median pixel intensities within background regions of increasing size containing the feature.

5. (previously presented) The method of claim 4 wherein the convergence metric computed for each feature is proportional to a size of a background region containing the

feature with a greatest difference between the mean and median pixel intensity for pixels within the background region.

6. (previously presented) The method of claim 4 wherein the convergence metric computed for a feature is proportional to a size of a background region containing the feature with a greatest difference between the mean and median pixel intensity for pixels within the background region, when a difference between a largest difference between mean and median pixel intensity for pixels within a background region and a smallest difference between mean and median pixel intensity for pixels within a background region is greater than a threshold value, and otherwise the convergence metric computed for a feature is a size of the feature.

7. (previously presented) The method of claim 4 wherein the convergence metric computed for each feature is proportional to a size of a background region containing the feature with a difference between the mean and median pixel intensity for pixels within the background region near to, but not equal to, the size of a background region with a greatest difference between the mean and median pixel intensity for pixels within the background region.

8. (original) The method of claim 4 wherein features are disk shaped, and the background regions of increasing size are annuli circumscribing the feature with increasing outer radii.

9 (previously presented) A method comprising forwarding, to a remote location an indication obtained by a method of claim 1 as to whether or not a microarray data set contains a background intensity gradient.

10. (previously presented) A method comprising receiving from a remote location an indication obtained by a method of claim 1 as to whether or not a microarray data set contains a background intensity gradient.

11. (currently amended) A computer program ~~implementing~~ that controls an electronic computer to carry out the method of claim 1 stored in a computer-readable medium.

12. (currently amended) A method, carried out by an electronic computer under control of a computer program, for characterizing background intensity gradients within a microarray data set, the method comprising:

computing, by an electronic computer, convergence metrics for features within the microarray data set; and

    when the convergence metrics computed for a number of features are larger than a threshold value,

grouping, by an electronic computer, features with computed convergence metrics by position; and

characterizing, by an electronic computer, a background intensity gradient corresponding to each group of features by an area of the microarray surface corresponding to the group and by a position of the group on the surface of the microarray;

and outputting, by an electronic computer, a numerical indication of the characterized background intensity gradients to at least one of: a user, a display, a memory, or a computer.

13. (previously presented) The method of claim 12 further including characterizing a background intensity gradient corresponding to a group of features by an average computed convergence metric for the features of the group.

14. (previously presented) The method of claim 12 wherein a convergence metric is computed for each feature in the microarray data set.

15. (previously presented) The method of claim 12 wherein a convergence metric is computed for a selected number of features in the microarray data set.

16. (previously presented) The method of claim 12 wherein the convergence metric computed for each feature is a convergence metric related to a difference between mean and median pixel intensities within background regions of increasing size containing the feature.

17. (original) The method of claim 16 wherein features are disk shaped, and the background regions of increasing size are annuli circumscribing the feature with increasing outer radii.

18 (original) The method of claim 12 further comprising forwarding, to a remote location a characterization of a background intensity gradient within the microarray data set.

19. (currently amended) A computer program ~~implementing~~ that controls an electronic computer to carry out the method of claim 12 stored in a computer-readable medium.

20. (previously presented) A microarray data set analysis system comprising:

- a stored image of a microarray; and

- a processing entity that

- computes a convergence metric for features within the image of the microarray; and

- when the convergence metrics computed for a number of features are larger than a threshold value,

- determines that a background intensity gradient is present in the image of the microarray;

- groups features with computed convergence metrics larger than a threshold value by position; and

- characterizes a background intensity gradient corresponding to each group of features;

and outputs a numerical indication of the characterized background intensity gradient to at least one of: a user, a display, a memory, or a computer..

21. (previously presented) The microarray data set analysis system of claim 20 wherein the processing entity characterizes the background intensity gradient corresponding to each group of features by one or more of:

- an area of the microarray surface corresponding to the group of features;
- a position of the group of features on the surface of the microarray; and
- an average computed convergence metric for the group of features.

22. (previously presented) The microarray data set analysis system of claim 20 wherein a convergence metric is computed for each feature in the image of the microarray.

23. (previously presented) The microarray data set analysis system of claim 20 wherein a convergence metric is computed for a selected number of features in the image of the microarray.

24. (previously presented) The microarray data set analysis system of claim 20 wherein the convergence metric computed for each feature is a convergence metric related to a difference between mean and median pixel intensities within background regions of increasing size containing the feature.

25. (previously presented) The microarray data set analysis system of claim 24 wherein features are disk shaped, and the background regions of increasing size are annuli circumscribing the feature with increasing outer radii.

26. (currently amended) A method, carried out by an electronic computer under control of a computer program, for detecting a background intensity gradient within a microarray data set, the method comprising:

- computing, by an electronic computer, convergence metrics for features within

the microarray data set; and

when the convergence metrics computed for a number of features are larger than a threshold value,

determining, by an electronic computer, that the microarray data set exhibits a background intensity gradient, wherein a pattern of distribution of at least some of said features with convergence metrics larger than said threshold value indicate the location and direction of said background intensity gradient.

27. (currently amended) A method, carried out by an electronic computer under control of a computer program, for detecting a background intensity gradient within a microarray data set, the method comprising:

computing, by an electronic computer, convergence metrics for features within the microarray data set;

detecting, by an electronic computer, the presence of features with convergence metrics larger than said threshold value is indicative of the presence of a background intensity gradient within said microarray data set.